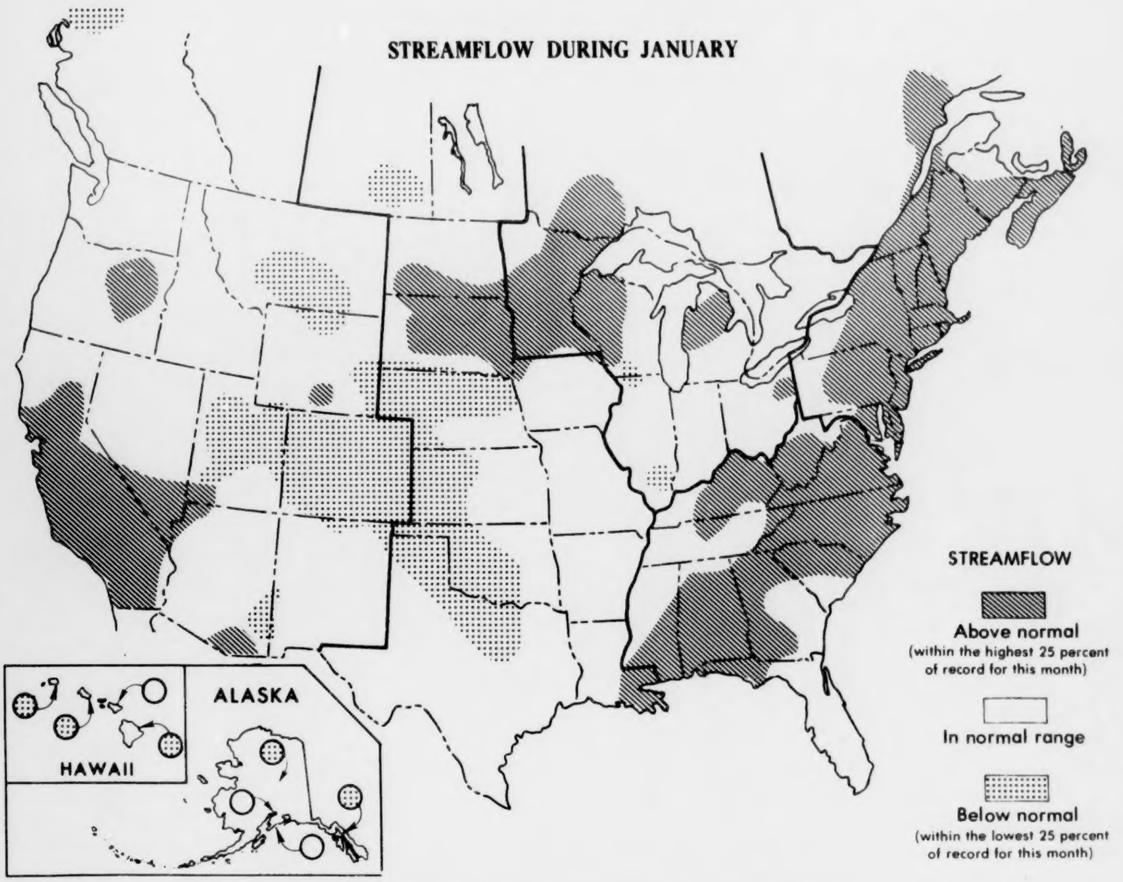
WATER RESOURCES REVIEW for

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CANADA
DEPARTMENT OF THE ENVIRONMENT
WATER RESOURCES BRANCH

JANUARY 1978

STREAMFLOW DURING JANUARY



STREAMFLOW AND GROUND-WATER CONDITIONS

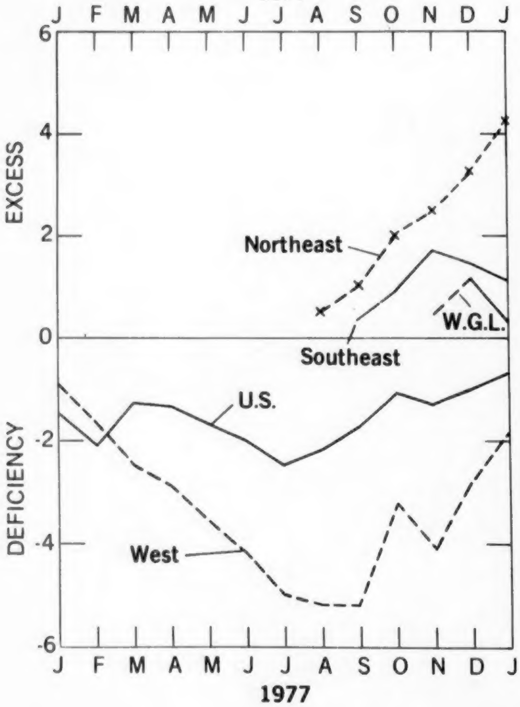
Above-normal streamflow again characterized large parts of the Northeast and Southeast Regions where monthly mean flows were highest of record for the month in many States. Flows remained above the normal range in Minnesota and parts of adjacent States and increased into that range in most of California where state officials declared the drought officially over. Snowpack was generally reported as average to above average throughout the West and far above average in the Ohio River Valley and several northeastern States where a potential flood threat exists in the event of a sudden thaw.

Below-normal streamflow persisted in Colorado and Utah and parts of adjacent States and also in Hawaii where monthly mean flows were lowest of record.

Flooding occurred in Alabama, Connecticut, Delaware, Florida, Georgia, Maine, Maryland, New York, North Carolina, and West Virginia.

Ground-water levels showed mixed trends in the Northeast but continued above normal in most of the region. In the Southeast and Western Great Lakes Regions, trends were mixed overall, and levels were above and below average; a new January low occurred in Tennessee and a new high in Ohio. In the Midcontinent and West there was likewise no general trend; levels were above and below average in the Midcontinent and predominantly below average in the West. New January lows were reached in Arizona, Arkansas, Idaho, Nevada, Texas, and Utah; a new alltime low was measured in Arizona.

INDEX OF STREAMFLOW
1977



The index of streamflow excess or deficiency is shown only when the current value for a region is greater than 1 or less than -1, respectively. The index is computed by multiplying the percent of a region that is deficient or excessive by the average duration of deficiency or excess. Thus, the index of streamflow deficiency for the West during January improved to a value of -1.8 when 14 percent (i.e., 0.14) of the area in the West Region was deficient for an average duration of 13 months (0.14 X 13 = 1.8). The index of streamflow excess in the Northeast Region increased during January to a value of 4.25 with monthly mean flows highest of record at several index stations.

NORTHEAST

[Atlantic Provinces and Quebec; Delaware, Maryland, New York, New Jersey, Pennsylvania, and the New England States]

Streamflow generally increased in most of the region but decreased in Quebec and Pennsylvania, and was variable in New York. Monthly and/or daily mean flows were highest of record in parts of Connecticut, Maine, Maryland, Massachusetts, New York, and Vermont. Above-normal flows persisted in the southern half of the region and increased into that range in parts of Maine and New Brunswick. Flooding occurred in Connecticut, Delaware, Maine, Maryland, and New York. Monthend snow cover in parts of the region represented a potential flood threat.

Ground-water levels remained above normal in nearly the entire region. In some wells, levels were again at or close to the highest end-of-month levels of the past 20–30 years for this time of year.

In Maine, streamflow increased contraseasonally and was highest of record for January at all index stations. For example, in the central part of the State, the monthly mean discharge of 1,179 cfs, and the daily mean discharge of 6,400 cfs on the 10th at Piscataquis River near Dover-Foxcroft (drainage area, 297 square miles) were highest for the month since records began in 1902. High flows, coupled with ice jams, caused widespread flooding that resulted in damage estimated at millions of dollars.

In the Atlantic Provinces, streamflow increased contraseasonally at all index stations and was above the normal range except at Upsalquitch River at Upsalquitch, New Brunswick. Mean flow in St. Mary's River at

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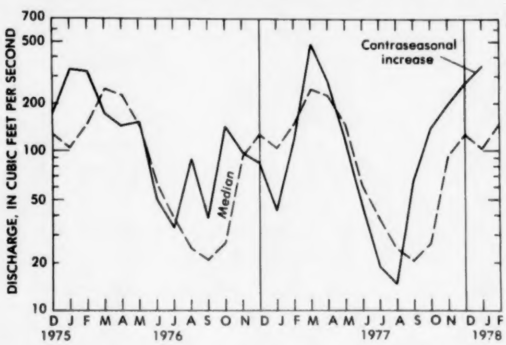
Stillwater, Nova Scotia, increased sharply to over 3 times median and remained in the above-normal range for the 2d consecutive month.

Streamflow throughout Quebec decreased seasonally and was generally in the normal range. However, in the northeastern part of the Province, in Outardes River at Outardes Falls, high carryover flow from December held monthly mean flow at that site in the above-normal range for the 4th consecutive month. Also in Quebec, but south of the St. Lawrence River, the seasonal decline in streamflow was augmented by snowmelt runoff in St. Francois River at Hemming Falls where monthly mean flow was above the normal range at about 2 times the median.

Throughout the central New England States, streamflow was above the normal range as a result of rain, warm temperatures, and snowmelt that combined to produce moderate to substantial rises generally during the periods January 9–10 and 26–28. In central Massachusetts, the monthly mean discharge of 477 cfs at Ware River at Coldbrook (drainage area, 96.8 square miles) was highest for January in 50 years of record. The highest January runoff for period of record also occurred at the gaging stations on Passumpsic River at Passumpsic, Vermont, and West Branch Westfield River at Huntington, Mass. Above-normal streamflows have persisted for 4, 5, and 6 consecutive months, respectively, at the index stations, Branch River at Forestdale, Rhode Island, White River at West Hartford, Vermont, and Ware River at Coldbrook, Massachusetts.

In Connecticut, streamflow increased and generally remained in the above-normal range for the 5th consecutive month. At Pomperaug River at Southbury (drainage area, 75.0 square miles), the daily mean discharge of 2,580 cfs on the 26th was highest for January in 45 years of record. Monthly mean discharge at Southbury increased contraseasonally to over 3 times the median during the month. (See graph.) Similarly, in the northeastern part of the State, the daily mean flow of 960 cfs



Monthly mean discharge of Pomperaug River at Southbury, Conn. (Drainage area, 75.0 sq mi; 194.2 sq km)

on the 26th at Mount Hope River near Warrenville (drainage area, 28.6 square miles) was highest in 37 years of record. In the southeastern part of the State, the monthly mean discharge of 672 cfs and the daily mean discharge of 5,900 cfs on the 26th in Salmon River near East Hampton (drainage area, 102 square miles), were highest for January in 49 years of record.

In northwestern New York, monthly mean flow at the index station, West Branch Oswegatchie River near Harrisville decreased seasonally to 156 percent of median but remained in the above-normal range for the 6th consecutive month. In the south-central part of the State, monthly mean discharge in Susquehanna River at Conklin decreased contraseasonally to 2 times the median flow and remained in the above-normal range for the 5th consecutive month. In the eastern part of the State, monthly mean flows remained in the above-normal range for the 5th consecutive month in Hudson River at Hadley and Mohawk River at Cohoes. On Long Island, the monthly mean discharge of 25.9 cfs and the daily mean discharge of 189 cfs on the 26th at Massapequa Creek at Massapequa (drainage area, about 38 square miles) were highest for January in record that began in 1936. Also on Long Island, the peak discharge of 232 cfs on January 26 at Carlls River at Babylon (drainage area, about 35 square miles) and the peak discharge of about 200 cfs on January 30 at Peconic River at Riverhead (drainage area, about 75 square miles) were highest in over 30 years of record at those sites.

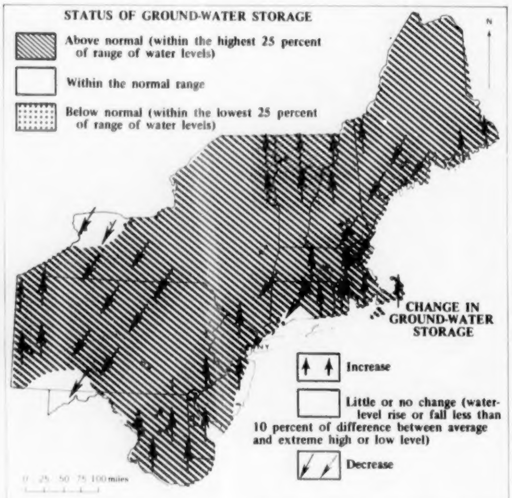
In New Jersey, monthly mean flows remained in the above-normal range for the 3d and 4th consecutive months, respectively, at the index stations, Great Egg Harbor River at Folsom and South Branch Raritan River near High Bridge.

In Pennsylvania, streamflow decreased contraseasonally at all index stations and was near median except in the Susquehanna River at Harrisburg where monthly mean flow remained in the above-normal range for the 5th consecutive month.

In Maryland and Delaware, streamflow increased seasonally and remained above the normal range throughout the bistate area. Some flooding resulted when widespread rains fell on frozen ground near monthend. At Seneca Creek at Dawsonville, Md. (drainage area, 101 square miles), the monthly mean discharge of 395 cfs and the daily mean flow of 5,010 cfs on the 26th were highest for January in 48 years of record. Similarly, in the Choptank River basin in eastern Maryland, the monthly mean flow of 533 cfs at the index station near Greensboro (drainage area, 113 square miles) was highest for January in 30 years of record.

In the extreme southern part of the region, monthly mean flow in Potomac River near Washington, D.C. (drainage area, 11,560 square miles), increased seasonally and remained in the above-normal range for the 3d consecutive month. The daily mean flow of 115,000 cfs on the 28th was only 3,000 cfs less than the record high for January that occurred in 1943.

Ground-water levels showed a mixed pattern of rises and falls. (See map.) For example, levels rose in New



Map shows ground-water storage near end of January and change in ground-water storage from end of December to end of January.

Jersey, Delaware, eastern Maryland, and in Rhode Island and immediately surrounding areas; and declined in the coastal areas of northeastern Massachusetts, southeastern New Hampshire, and southern Maine. During the month, levels remained in the above-normal range in nearly the entire region. Levels in some wells in parts of all the States, except Maryland and Delaware, were highest for end of January in more than 20 years, reflecting recharge from above-normal precipitation during the past several months.

SOUTHEAST

[Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia]

Streamflow generally increased seasonally and was greater than median in all parts of the region. Flows remained in the above-normal range in parts of all States except Kentucky and North Carolina and increased into that range in those two States. Monthly or daily mean discharges were highest of record for the month in parts of Alabama, Florida, North Carolina, South Carolina, Virginia, and West Virginia. Flooding occurred in Alabama, Florida, Georgia, North Carolina, and West Virginia. Monthend snow cover in parts of the northern half of the region represented a potential flood threat.

Ground-water levels showed mixed trends in West Virginia and Florida, declined in Mississippi and Tennessee with a new January low near Memphis, and generally rose elsewhere. Levels were above and below average in much of the region, but were generally above average in Kentucky and Alabama and below average in Florida.

In West Virginia, rapid runoff from rain and melting snow January 27, 28 caused many streams throughout the State to reach, or slightly exceed, National Weather Service flood stages. Tygart Valley River near Elkins, in the northern part of the State, crested at gage height, 15.8 feet on the 27th. This was the highest stage observed at this site since records began in October 1944. About 20 miles upstream, Tygart Valley River near Dailey crested at gage height, 14.8 feet on the 26th, the highest observed stage since the flood of February 4, 1932 at that site. In southeastern West Virginia, the monthly mean flow of 9,279 cfs in Greenbrier River at Alderson (drainage area, 1,357 square miles) was highest for January in 83 years of record. In the south-central part of the State, mean flow in Kanawha River at Kanawha Falls increased seasonally and remained above the normal range for the 4th consecutive month.

In Virginia, flows increased seasonally in all parts of the State and were in the above-normal range. In northern Virginia, the monthly mean discharge of 1,678 cfs, and the daily mean of 11,400 cfs on the 26th, in Rapidan River near Culpeper (drainage area, 472 square miles) were highest for the month in 48 years of record. In central and southeastern parts of the State, mean flows generally were about 4 times the January median flows, and in extreme western Virginia, monthly mean flow in North Fork Holston River near Saltville increased into the above-normal range as a result of the increased runoff January 26, 27.

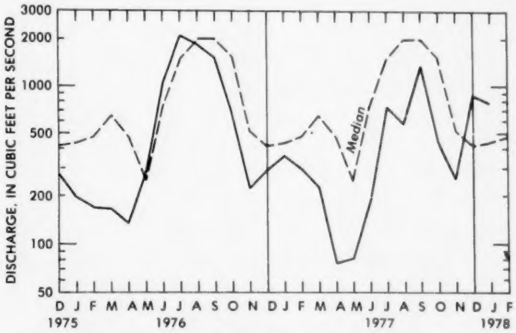
In North Carolina, rapid runoff from heavy rainfall and melting snow on the 25th and 26th resulted in minor flooding in the French Broad River basin in the extreme western part of the State, and in the Yadkin River basin, in the west-central part. The monthly mean discharge of 1,084 cfs in South Yadkin River near Mocksville (drainage area, 313 square miles) was highest for January since records began at that stream-gaging station in October 1938. In east-central North Carolina, mean flows in Neuse River near Clayton and Cape Fear

River at William O. Huske Lock near Tarheel increased sharply, were above the normal range, and were 3 and 3½ times their median flows, respectively.

Severe flooding occurred in a small area in southwestern Georgia, between Columbus and Bainbridge, where the peak discharge on several streams was reported to be equal to that of a 25-year flood. In the south-central part of the State, high carryover flow from December, augmented by increased runoff from rains in January, contributed to a continuation of above-normal monthly mean discharge in Alapaha River at Statenville. In northern Georgia, mean flows in Oconee River near Greensboro and Etowah River at Canton increased sharply, were 2 times the January median flows for those two sites, and were above the normal range.

Flooding occurred near monthend in southern Alabama and in the adjacent area of northwestern Florida. In Conecuh River basin in southeastern Alabama, monthly mean flow at the index station at Brantley (drainage area, 492 square miles) increased sharply and was nearly 3 times median for the month. The daily mean discharge of 14,100 cfs on the 27th, at Brantley, was highest for the month since records began in October 1937. In the northwestern part of the State, mean flow in Tombigbee River at Demopolis lock and dam, near Coatopa, decreased contraseasonally but remained in the above-normal range for the 5th consecutive month. In central Alabama, monthly mean discharge in Cahaba River at Centreville increased seasonally and was above the normal range for the 4th time in the past 5 months.

In extreme northwestern Florida, where rainfall amounts of as much as 10 inches were reported from Pensacola, rapid runoff resulted in flooding along many streams. Peak discharges generally were less than that of a 15-year flood. For example, in Baggett Creek near Milligan (drainage area, 7.77 square miles) a peak discharge of 480 cfs (equal to that of a 10-year flood) occurred January 25; in Pond Creek near Milton (drainage area, 58.7 square miles) the peak discharge of 2,700 cfs on January 25 was equal to that of an 11-year flood; and in Perdido River at Barrineau Park (drainage area, 394 square miles), the peak discharge of 17,500 cfs was equal to that of a 14-year flood. Flooding occurred also along Shoal River, in northwestern Florida. The peak discharge on that stream near Mossy Head (drainage area, 123 square miles) was equal to that of an 8-year flood, and the monthly mean discharge of 2,730 cfs, and the daily mean of 17,290 cfs on January 27 near Crestview (drainage area, 474 square miles) were highest for January in record that began in July 1938. In west-central Florida, mean flow in Peace River at Arcadia decreased contraseasonally and was within the normal range but was almost twice the January median flow. (See graph.)



Monthly mean discharge of Peace River at Arcadia, Fla. (Drainage area, 1,367 sq mi; 3,541 sq km)

In South Carolina, total precipitation for the month was reported to be above normal, and streamflow generally remained in the above-normal range. In the northeastern part of the State, where mean flow in Lynches River at Effingham remained above the normal range for the 3d consecutive month, the monthly mean discharge of 2,833 cfs, and the daily mean of 7,470 cfs on the 27th, were highest for January since records began in August 1929. In the adjacent basin of Pee Dee River, monthly mean discharge at Peedee increased sharply, was almost 2½ times the January median flow, and also remained above the normal range for the 3d consecutive month.

In Tennessee, precipitation across the State was reported to be near normal but because of high carryover flows from December, augmented by runoff from January rains and melting snow, monthly mean discharges in Harpeth River near Kingston Springs, in the north-central part of the State, and in French Broad River below Douglas Dam, in extreme eastern Tennessee, remained in the above-normal range for the 4th and 5th consecutive months, respectively. Elsewhere in the State, flows were variable and within the normal range.

In southwestern Mississippi, monthly mean flow in Pascagoula River at Merrill increased sharply and was above the normal range for the 4th time in the past 5 months. In the adjacent basin of Pearl River, monthly mean discharge, as measured at Bogalusa, La., near the Mississippi-Louisiana boundary, decreased contraseasonally but remained above the normal range for the 5th consecutive month. Elsewhere in the State, mean flows generally decreased contraseasonally but were in the normal range and well above median.

In Kentucky, flow generally increased seasonally as a result of runoff from rain and melting snow. Monthly

mean discharge in Green River at Munfordville, in the south-central part of the State, was in the above-normal range for the 4th time in the past 5 months and was almost twice the January median flow. In northern Kentucky, mean flow in Licking River at Catawba increased sharply into the above-normal range and was nearly twice the January median.

Ground-water levels in West Virginia rose and were above average in the central and southwestern parts of the State, but declined and were below average elsewhere. In Kentucky, levels generally rose and were above average statewide. In Virginia, levels rose about 2 feet or more in all three observation wells, and were above average in the Bacon-Summerville and Matoaka Manor wells, but below average in the Tyler well in Louisa County in the central Virginia Piedmont. In western Tennessee, the artesian level in the key well in the "500-foot sand" near Memphis declined slightly and reached a new low for January; the level continued more than 15 feet below average. In North Carolina, levels rose statewide, and were above average except in the eastern Piedmont. Levels declined slightly in wells screened in the Sparta Sand in the Jackson area, Mississippi. Levels in Alabama generally rose and were generally above average. In Georgia, levels in the Piedmont rose in response to heavy rainfall late in January, and most were above average. In the coastal counties, levels in the principal artesian aquifer held steady or rose up to 1 foot, but generally continued below average; heavy rains caused levels to rise to as much as 1 foot above average in the water-table aquifer. In Dougherty County, levels rose as much as 4 feet, but were below those of a year ago; the level in the index well rose to near-average by month's end. In Florida, levels in the central peninsula rose 7 to 20 feet; they declined somewhat and were below average in most other parts of the State.

WESTERN GREAT LAKES REGION

[Ontario; Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin]

Streamflow generally decreased seasonally in the northern part of the region, and contraseasonally in the southern part where temperatures were below normal. Flows remained above the normal range in parts of Ontario, Michigan, Minnesota, Ohio, and Wisconsin, and were highest for the month in parts of Minnesota. Monthend snow cover in parts of the region, reported to be above-normal, represented a potential flood threat.

Ground-water levels showed mixed trends in the region except in Michigan and Illinois, where they generally declined, and in Ohio, where they rose with a new high for January. Levels were above average in Illinois and Ohio, and above and below in other States.

In the west-central part of Minnesota, in Buffalo River near Dilworth (drainage area, 1,040 square miles), the monthly mean discharge of 50.7 cfs, and the daily mean of 75 cfs on the 1st, were highest for January in record that began in March 1931. Monthly mean flows have been in the above-normal range at that site for 4 consecutive months. In extreme northern Minnesota, along the Ontario-Minnesota boundary, high carryover flow from December contributed to the January monthly mean discharges at two international gaging stations, Rainy River at Manitou Rapids and Pigeon River at Middle Falls, near Grand Portage, that were 2d highest for January in 48 and 53 years of record, respectively. In the northern and southwestern parts of the State, mean flows in Mississippi River at St. Paul and Minnesota River near Jordan decreased seasonally but remained above the normal range for the 4th and 3d consecutive month, respectively. In central Minnesota, mean discharge in Crow River at Rockford decreased but remained above the normal range for the 3d consecutive month and was 4½ times the January median. Cumulative runoff at that index station for the first 4 months of the 1978 water year was 7½ times the median cumulative runoff. Contents of the Mississippi River Headwaters Reservoir System decreased and were 74 percent greater than last year and 3 percent less than the average for end of January.

In Wisconsin, streamflow generally decreased seasonally except where flow was regulated. In the northwestern part of the State, mean flow in Jump River at Sheldon decreased seasonally, but remained in the above-normal range, partly as a result of high carryover flow from December. In the adjacent basin of Chippewa River, mean flow at Chippewa Falls also decreased seasonally but, as a result of high carryover flow from December, augmented by increased runoff about mid-January, remained above the normal range for the 5th consecutive month. In the central part of the State, mean flow in Wisconsin River at Muscoda, which is regulated, increased and remained above the normal range. In eastern Wisconsin, mean flow in Fox River at Rapide Croche Dam, near Wrightstown, which also is regulated, increased and remained above median but in the normal range.

In southwestern Ontario, monthly mean flow in English River at Umfreville decreased seasonally but was in the above-normal range for the first time since April 1976. In eastern and southeastern parts of the Province,

(Continued on page 8.)

SELECTED DATA FOR THE GREAT LAKES, GREAT SALT LAKE, AND OTHER HYDROLOGIC SITES

GREAT LAKES LEVELS

Water levels are expressed as elevations in feet above International Great Lakes Datum 1955

(Data furnished by National Ocean Survey, NOAA, via U.S. Army Corps of Engineers office in Detroit. To convert data to elevations above mean sea level datum of 1929, add the following values: Superior, 0.96; Michigan-Huron, 1.20; St. Clair, 1.24; Erie, 1.57; Ontario, 1.22.)

Lake	January 31, 1978	Monthly mean, January		January		
		1978	1977	Average 1900–75	Maximum (year)	Minimum (year)
Superior (Marquette, Mich.)	600.60	600.75	599.80	600.34	601.33 (1975)	598.58 (1926)
Michigan and Huron (Harbor Beach, Mich.)	578.30	578.32	578.19	577.72	579.92 (1973)	575.39 (1965)
St. Clair (St. Clair Shores, Mich.)	574.54	574.55	573.85	572.51	575.37 (1974)	569.86 (1936)
Erie (Cleveland, Ohio)	571.30	571.33	570.40	569.74	572.39 (1973)	567.62 (1935)
Ontario (Oswego, N.Y.)	246.08	245.79	244.03	243.99	246.10 (1946)	241.67 (1935)

GREAT SALT LAKE

Alltime high: 4,211.6 (1873). Alltime low: 4,191.35 (October 1963).	January 31, 1978	January 31, 1977	Reference period 1904–77		
			January average, 1904–77	January maximum (year)	January minimum (year)
Elevation in feet above mean sea level:	4,199.10	4,200.50	4,198.1	4,204.40 (1924)	4,191.90 (1964)

LAKE CHAMPLAIN, AT ROUSES POINT, N.Y.

Alltime high (1827–1977): 102.1 (1869). Alltime low (1939–1977): 92.17 (1941).	January 31, 1978	January 31, 1977	Reference period 1939–75		
			January average, 1939–75	January max. daily (year)	January min. daily (year)
Elevation in feet above mean sea level:	98.10	95.35	95.27	98.37 (1974)	93.56 (1948)

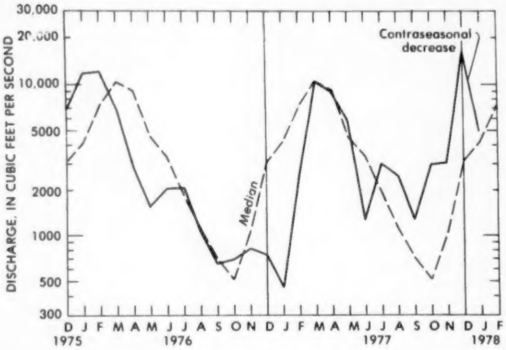
FLORIDA

Site	January 1978		December 1977	January 1977
	Discharge in cfs	Percent of normal	Discharge in cfs	Discharge in cfs
Silver Springs near Ocala (northern Florida)	640	81	600	760
Miami Canal at Miami (southeastern Florida)	272	130	299	236
Tamiami Canal outlets, 40-mile bend to Monroe	60	183	37.8	32

(Continued from page 6.)
mean flows also decreased seasonally and were less than median but were in the normal range.

In the Rock River basin, in northwestern Illinois and southwestern Wisconsin, below-normal temperatures resulted in a sharp contraseasonal decrease in monthly mean flow (into the below-normal range) at the index station, Pecatonica River at Freeport, Ill. Downstream, mean flow in Rock River near Joslin, Ill. also decreased contraseasonally but remained above median and was in the normal range. Similarly, in Sangamon River and Skillet Fork, in central and southern parts of Illinois, respectively, mean flows decreased very sharply. The monthly mean discharge of 35.3 cfs in Skillet Fork at Wayne City (drainage area, 464 square miles) was only 19 percent of the January median, and in Sangamon River at Monticello, where monthly mean discharge in December was 8 times the median, mean flow in January was only 80 percent of median for the month.

In Indiana, where mean flows at all index stations were above the normal range and ranged from 4 to 8 times median in December, flows decreased sharply, as a result of below-normal temperatures in January, and were in the normal range. In the southeastern part of the State, where mean flow in East Fork White River at Shoals was above the normal range for 5 consecutive months through December, flow decreased sharply in January, was within the normal range, and was only slightly greater than median. (See graph.)



Monthly mean discharge of East Fork White River at Shoals, Ind. (Drainage area, 4,927 sq mi; 12,761 sq km)

In Ohio, streamflow decreased contraseasonally at all index stations in the State but remained above the normal range in Little Beaver Creek near East Liverpool, in the northeastern part of the State, for the 7th consecutive month. In northwestern Ohio, where mean flow in Maumee River at Waterville (drainage area, 6,330 square miles) was 20,840 cfs (923 percent of median) in December, monthly mean flow decreased to 4,244 cfs in January (96 percent of median). Similarly, in central Ohio, where mean flow in Scioto River at Higby (drainage area, 5,131 square miles) was 12,050 cfs (740 percent of median) in December, monthly mean flow decreased to 5,550 cfs (147 percent of median) in January, as a result of below-normal temperatures. Contents of reservoirs in Ohio near monthend were 16 percent greater than a year ago in the Mahoning River basin upstream from Newton Falls, and 39 percent greater than a year ago in the Scioto River basin upstream from Higby.

In the northern part of Michigan's Lower Peninsula, monthly mean discharge in Muskegon River at Evart decreased seasonally but remained in the above-normal range, partly as a result of high carryover flow from December. In the southern part of the Lower Peninsula, mean flow decreased constraseasonally in Red Cedar River at East Lansing and was less than median, partly as a result of below-normal temperatures. At monthend, daily mean discharge was slightly below the normal range at this station. In the Upper Peninsula, mean flow in Sturgeon River near Sidnaw decreased seasonally and remained above median for the 5th consecutive month.

Ground-water levels in shallow water-table wells in Minnesota declined but continued above average in the southern part of the State, and rose but continued below average in the north. In the Minneapolis-St. Paul area, artesian levels changed only slightly in wells tapping the Prairie du Chien-Jordan aquifer but continued to rise in the deeper Mt. Simon-Hinckley aquifer; both continued below average. Levels in northwestern Wisconsin were normal, recovering from lows in 1977; in the northeast, levels were below normal. Levels in the artesian sandstone aquifer in eastern Wisconsin continued to decline in metropolitan pumping centers. In Michigan, levels declined in most areas, were below average in the western part of Upper Peninsula and in the central and southern parts of the Lower Peninsula; they were near average elsewhere. In northwestern Illinois, the level in the shallow index well in glacial drift at Princeton, in Bureau County, declined about 1 foot but continued nearly 4 feet above average. The level in the index well in northeastern Ohio rose and reached a record monthly high for the second consecutive month. In central Ohio, levels rose significantly and were above average.

MIDCONTINENT

[Manitoba and Saskatchewan; Arkansas, Iowa, Kansas, Louisiana, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, and Texas]

Streamflow generally decreased seasonally in Saskatchewan and Manitoba and in northern and central States of the region, but generally increased seasonally in Oklahoma and Texas, and was variable in Arkansas and Louisiana. Flows remained in the above-normal range in parts of Louisiana, North Dakota, and South Dakota, and in the below-normal range in parts of Kansas,

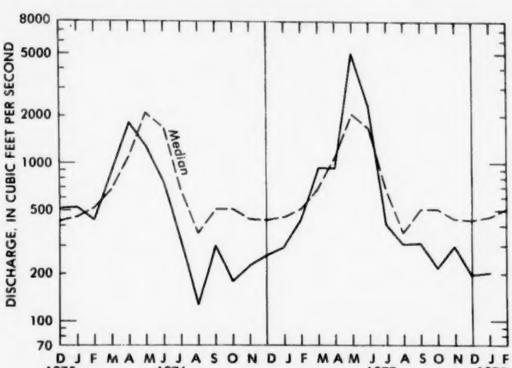
Nebraska, Oklahoma, and Texas. Monthend snow cover was reported to be near or below normal.

Ground-water levels declined in North Dakota, but trends were mixed elsewhere in the region. Levels were above average in Louisiana, predominantly above average in Nebraska and Iowa, below average in Arkansas, and mostly below average in Kansas. Levels were above and below average in other States. New lows for January occurred in Arkansas and Texas.

In southeastern Louisiana, high carryover flow from December, augmented by runoff from thunderstorms during January, resulted in above-normal monthly mean discharge in Amite River near Denham Springs for the 6th successive month. In the west-central part of the State, mean flow in Calcasieu River near Oberlin increased seasonally and was 1½ times the median flow but was in the normal range. In northern Louisiana, where monthly mean discharge in Saline Bayou near Lucky was below the normal range in December, flow increased seasonally and was in the normal range but was only 65 percent of median for the month.

In north-central Texas, monthly mean flow in North Bosque River near Clifton continued to increase seasonally but remained at about 1/3 median and in the below-normal range. In western Texas, monthly mean flows were above the normal range in parts of the San Saba River and Concho River basins. Elsewhere in the State, mean flows were in the normal range.

In Oklahoma, monthly mean flow in Washita River near Durwood increased slightly but remained below the normal range and was only 45 percent of median. (See graph.) Several snow storms occurred in the State during the month but only minor runoff from melting snow occurred because of low temperatures.



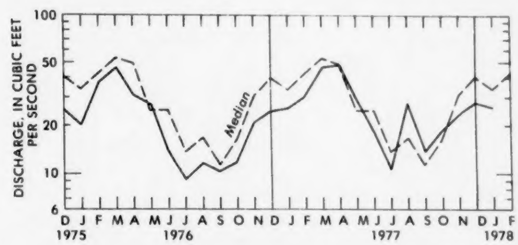
Monthly mean discharge of Washita River near Durwood, Okla. (Drainage area, 7,202 sq mi; 18,653 sq km)

In southern Arkansas, mean flow in Saline River near Rye continued to increase seasonally but remained in the normal range for the 7th consecutive month. In northern Arkansas and in Missouri, mean flows at the index stations decreased contraseasonally, as a result of low temperatures, and were less than median but within the normal range.

In Iowa, monthly mean flows generally decreased seasonally and were in the normal range but were greater than median. In the southwestern part of the State, where mean flow in Nishnabotna River above Hamburg was above the normal range for 4 consecutive months through December, mean flow in January decreased sharply as a result of low temperatures, and was in the normal range.

In Kansas, monthly mean flow also decreased at all index stations, and was only 25 percent of median, and in the below-normal range for the 15th time in the past 20 months, in Saline River near Russell.

In northwestern Nebraska, monthly mean flow in Niobrara River above Box Butte Reservoir decreased seasonally and remained below the normal range for the 3d consecutive month. (See graph.) In the northeastern part of the State, mean flow in Elkhorn River at Waterloo decreased seasonally to below median and was in the below-normal range. In the north-central part of the State, flows were reported to be near normal but in southwestern Nebraska, no improvement in the recovery rate of the Republican River reservoirs was noted.



Monthly mean discharge of Niobrara River above Box Butte Reservoir, Nebr. (Drainage area, 1,400 sq mi; 3,630 sq km)

In South Dakota, mean flows in Big Sioux River, as measured at Akron, Iowa, and Bad River near Fort Pierre, decreased seasonally but remained above the normal range for the 4th consecutive month.

In southwestern North Dakota, monthly mean discharge in Cannonball River near Breien also decreased seasonally, but because of high carryover flow from December and a high rate of ground-water inflow, remained above the normal range and was 7 times the January median flow. In the eastern part of the State, mean flow in Red River of the North at Grand Forks decreased slightly from December but remained well above median and was near the upper limit of the normal range.

In southern Manitoba, monthly mean discharge in Waterhen River below Waterhen Lake continued to decrease seasonally and remained within the normal

range. The level of Lake Winnipeg at Gimli averaged 712.46 feet above mean sea level for the month, 0.59 foot below the long-term mean for January, 0.24 foot higher than last month, and 0.75 foot higher than a year ago.

In southeastern Saskatchewan, mean flow in Qu'Appelle River near Lumsden decreased contraseasonally and was in the below-normal range.

Ground-water levels in North Dakota declined slightly; levels continued above average in the west and below average in the east. In Nebraska, levels generally rose and at month's end were above average except in areas where there has been large-scale development of ground water for irrigation. In Iowa, levels in shallow water-table wells declined except in the north-central part of the State, where they rose slightly. Levels were generally above average except in the extreme northeast. In Kansas, levels declined except in the western part of the State; levels were below average except in the northeast, near Lawrence. In the rice-growing area of east-central Arkansas, the water level in the shallow Quaternary aquifer rose slightly—normal for this time of year—but was in the same range that has prevailed since 1961. The level in the deep aquifer—the Sparta Sand—rose seasonally nearly 21 feet, but was nearly 22 feet below average. In the Sparta Sand industrial aquifer of central and south Arkansas, the level in the key well at Pine Bluff declined about 3½ feet and was about 15 feet below average, reaching a new January low in 11 years of record. At El Dorado the level was about a foot lower than last month, and 3 feet below average. In Louisiana, levels declined in the heavily developed Miocene sands, but were stable in other Miocene aquifers. Levels in the Red River and Mississippi River alluvial aquifers rose in response to higher stream stages. Levels in the Chicot aquifer in the southwestern rice-growing area rose, as did those in the southeastern part of the State. Levels in the 400- and 600-foot sands in the Baton Rouge industrial area were almost 50 feet above their October levels. In Texas, levels declined but were above average in wells in the Edwards Limestone at Austin and San Antonio, rose but were below average in the Evangeline aquifer at Houston. Levels declined and were below average in the bolson deposits at El Paso, where a new January low was reached.

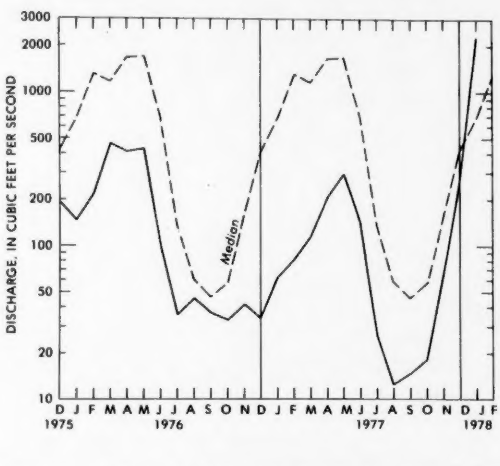
WEST

[Alberta and British Columbia; Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming]

Streamflow generally increased seasonally in Arizona, California, Colorado, Nevada, New Mexico, and Utah, generally decreased in Alberta, British Columbia, Idaho, Montana, Oregon, and Washington, and was variable in Wyoming. Monthly mean flows remained in the above-normal range in parts of Arizona and Oregon, and increased into that range in much of California, where State officials declared that the drought was ended, and where damaging floods and mudslides occurred. Monthly mean flows remained in the below-normal range in parts of Arizona, British Columbia, Colorado, Montana, New Mexico, Utah, and Wyoming.

Ground-water levels generally rose in southern California and Utah, and declined in the two index wells in Montana. Mixed trends prevailed elsewhere in the region. Levels were predominantly below average. A new alltime low was reached in Arizona, and new January lows occurred in Idaho, Nevada, Utah, and Arizona.

In California, a series of storms swept across the State during the latter part of December and the first 3 weeks of January, depositing near-record amounts of precipitation for a 30-day period. Rainfall amounts for the season were reported to be about 30 percent above normal in the northern part of the State and 50 percent above normal in the southern part. Monthend snowpack in the Sierra Nevada was reported to be about 30 to 40 percent above normal. State officials declared the drought to be officially ended. In the south-coastal area, mean flow in Arroyo Seco near Pasadena increased sharply to 7 times the January median flow and was above the normal range. Similarly, in central California, on the Sierra Nevada west slope, mean flow in Kings River above North Fork, near Trimmer, increased to nearly 3 times median and was above the normal range for the first time since October 1976. In northern California, also on the Sierra Nevada west slope, monthly mean flow in North Fork American River at North Fork Dam also increased sharply, to 3 times median, and was above the normal range for the first time since October 1975. (See graph.) The exceptionally



Monthly mean discharge of North Fork American River at North Fork Dam, Calif. (Drainage area, 342 sq mi; 886 sq km)

large amounts of rain were reported to have caused extensive damage to crops and to have caused mudslides that destroyed houses and closed highways. The rapid runoff caused flooding on many low-lying areas, including roadways. Most of the mudslide damage was reported to be along coastal streams. Combined contents in 10 of the larger reservoirs in northern California increased 3.3 million acre-feet during January, from 42 to 78 percent of average.

In Oregon, flows decreased contraseasonally except in the north-central part of the State, where mean flow in John Day River at Service Creek increased seasonally, remained in the above-normal range, and was 2¼ times the January median discharge. Elsewhere in the State, flows were less than median but within the normal range.

In Washington, where flows in December were above the normal range at all index stations, monthly mean discharges decreased sharply into the normal range, and generally were less than median.

In British Columbia, flows decreased seasonally in all parts of the Province and, in the northern basin of Skeena River, the monthly mean discharge at Usk remained below the normal range for the 3d consecutive month and was 60 percent of median. In the southern part of the Province, mean flow in Fraser River at Hope remained in the normal range for the 9th consecutive month and was 89 percent of median.

In Alberta, mean flows in Athabasca River at Hinton and Bow River at Banff decreased seasonally and remained in the normal range.

In Montana, mean flow remained in the below-normal range for the 3d consecutive month in Yellowstone River at Billings, where cumulative runoff for the first 4 months (October-January) of the 1978 water year was 14 percent below median. Elsewhere in the State, flows decreased seasonally, were in the normal range, and were at or near median flows for the month.

In Idaho, flows decreased seasonally except in the southern part of the State, where mean flow in Snake River at Weiser increased seasonally, was near median, and was within the normal range. Mean discharges also were in the normal range in the Boise, Clearwater, Coeur d'Alene, Kootenai, Salmon, and Weiser River basins. Monthend snowpack was above average in most mountainous areas but monthend reservoir storage, for irrigation, remained far below normal.

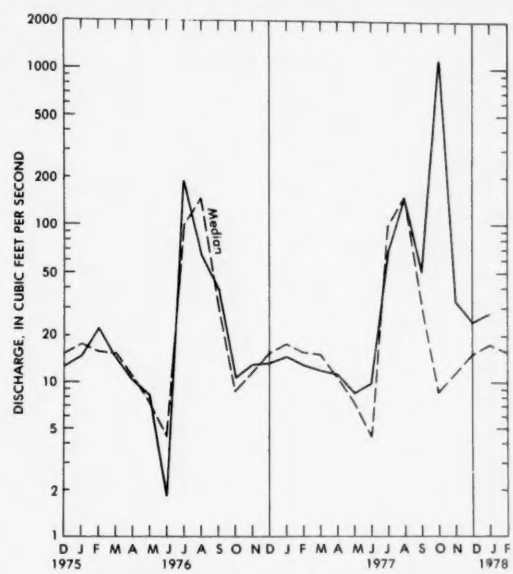
In Wyoming, monthly mean flow increased into the above-normal range in North Platte River above Seminoe Reservoir, near Sinclair, in the southern part of the State. In northern Wyoming, mean flows in tributaries of Yellowstone River, including Tongue River near Dayton, were in the below-normal range. Mean flow near Dayton was below the normal range for the 3d consecutive month.

In Colorado, monthly mean flows increased contraseasonally except in Arkansas River at Portland, east of the Continental Divide, where mean flow decreased seasonally and remained below the normal range. West of the Divide, mean flows in Animas River at Durango, Roaring Fork River at Glenwood Springs, and Yampa River at Steamboat Springs increased contraseasonally and were in the below-normal range.

In Utah, flows generally increased contraseasonally, but remained below the normal range except in San Juan River near Bluff, in the extreme southeastern part of the State, and in Weber River near Oakley, in northeastern Utah, where monthly mean discharges were within the normal range. Mean discharge near Oakley was below the normal range in 16 of the past 17 months. In east-central Utah, mean discharge in Green River at Green River and Colorado River near Cisco remained below the normal range for the 12th consecutive month. Similarly, in northern Utah, monthly mean flow in Big Cottonwood Creek near Salt Lake City was in the below-normal range for the 11th time in the past 12 months, and in the southwestern part of the State, mean flow in Beaver River near Beaver remained below the normal range for the 23d consecutive month.

In Nevada, mean flows increased seasonally and remained in the normal range.

In northwestern Arizona, monthly mean flow in Virgin River at Littlefield increased contraseasonally, as a result of increased runoff from rain at midmonth, and was above the normal range. In the extreme southern basin of San Pedro River, the mean flow at Charleston also increased, and remained above the normal range for the 4th consecutive month. (See graph.) In southeastern



Monthly mean discharge of San Pedro River at Charleston, Ariz. (Drainage area, 1,219 sq mi; 3,157 sq km)

Arizona, monthly mean discharge in Gila River at head of Safford Valley, near Solomon, increased seasonally but remained below the normal range.

In northern New Mexico and the adjacent area of Colorado, monthly mean flow in Rio Grande below Taos Junction Bridge, near Taos, increased contraseasonally but remained in the below-normal range for the 10th consecutive month. In the southeastern corner of the State, mean flow in Delaware River near Red Bluff increased contraseasonally and was in the normal range, after 2 successive months of below-normal flow.

Contents of the Colorado River Storage Project decreased 586,350 acre-feet during the month.

Ground-water levels in Washington declined in the key well at Spokane, but was ½ foot above average, and rose but was 2 feet below average in the well at Sumas in the western part of the State. In Idaho, the level in the well penetrating the sand and gravel aquifer in the Boise Valley rose, probably because of above-normal precipitation. Levels in the key wells representative of the Snake River Plain aquifer declined and all were below average. The well in the southwestern part near Eden reached a new monthend minimum for the third consecutive month. The level in the alluvial aquifer underlying the Rathdrum Prairie, northern Idaho, declined about a foot and was nearly 9 feet below average. In Montana, the level in the water-table well in Quarternary gravel in Missoula declined about a foot and was nearly a foot below average. The Hamilton Fairgrounds water-table well in alluvium also declined about a foot and was about ¼ foot below average. In southern California, the level rose more than 2 feet in the water-table observation well at Baldwin Park, Los Angeles County, but continued more than 70 feet below average. In the artesian well in the Los Alamitos area, in Orange County, the level rose nearly 6 feet, but was nearly 18 feet below average. In Nevada, the level rose in the Las Vegas well, but was at a new January low in more than 30 years of record. Levels rose and were above average in the Paradise Valley and Steptoe Valley wells, but the level declined and was below average in the well at Truckee Meadows. In Utah, levels generally rose, but all continued below average, with a new January low in the Holladay area. The level in the Blanding area well rose for the first time since September 1976. In Arizona, water levels rose in two index wells during January and declined in three. New January lows were measured in four of the wells; in one of these, the Tucson No. 2 well, the level reached an alltime low in 10 years of record. In New Mexico, the level in the Berrendo-Smith artesian well in Pecos Valley rose nearly 2 feet but was about 2 feet below average. Levels in the Hagerman West and Lovington water-table wells rose slightly, and the level in the Hrna well declined slightly; all continued below average.

ALASKA

Streamflow decreased seasonally throughout the State as a result of below-normal precipitation. In the southeastern part of the State, monthly mean flow at the index station, Gold Creek near Juneau, decreased sharply to only 17 percent of median and remained in the below-normal range for the 3d consecutive month. In the central part of the State, monthly mean discharge in Chena River at Fairbanks decreased to 72 percent of median and was below the normal range. Elsewhere in the State, mean flows were generally in the normal range.

Ground-water levels in the confined artesian aquifer in the Anchorage area fell about 1 foot, and wells near the main pumping centers declined as much as 3 feet. Shallow water-table well levels remained unchanged from December levels.

HAWAII

Streamflow generally decreased seasonally throughout the State and was below the normal range at all index stations on the four major islands except for Maui, which was normal. For example, on the island of Oahu, the monthly mean flow of 0.52 cfs in Kalihi Stream near Honolulu (drainage area, 2.61 square miles) was only 8 percent of median, below the normal range for the 4th consecutive month, and lowest for January in 64 years of record. On the island of Hawaii, the monthly mean discharge of 0.60 cfs in Waiakea Stream near Mountain View (drainage area, 17.4 square miles) was only 0.01 cfs greater than the minimum January flow of record set in 1940.

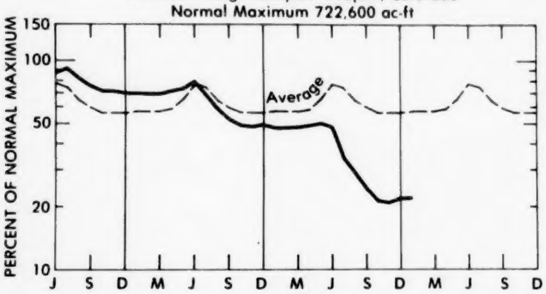
METRIC EQUIVALENTS OF UNITS USED IN THE WATER RESOURCES REVIEW

(Round-number conversions, to nearest four significant figures)

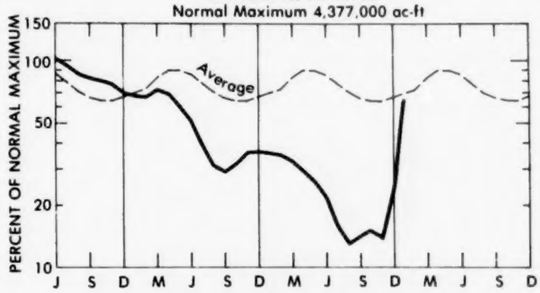
1 foot = 0.3048 meter 1 mile = 1.609 kilometers
1 acre = 0.4047 hectare = 4,047 square meters
1 square mile (sq mi) = 259 hectares = 2.59 square kilometers (sq km)
1 acre-foot (ac-ft) = 1,233 cubic meters
1 million cubic feet (mcf) = 28,320 cubic meters
1 cubic foot per second (cfs) = 0.02832 cubic meters per second = 1.699 cubic meters per minute
1 second-foot-day (cfsd) = 2,447 cubic meters
1 million gallons (mg) = 3,785 cubic meters = 3.785 million liters
1 million gallons per day (mgd) = 694.4 gallons per minute (gpm) = 2.629 cubic meters per minute = 3,785 cubic meters per day

USABLE CONTENTS OF SELECTED RESERVOIRS AND RESERVOIR SYSTEMS, JUNE 1975 TO JANUARY 1978

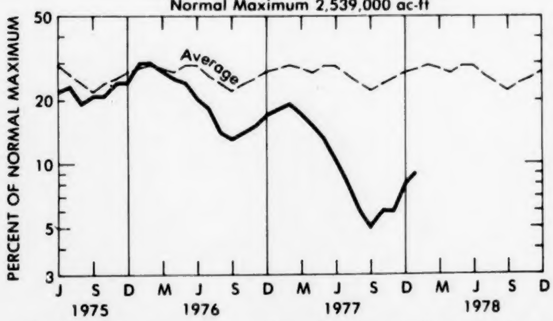
Colorado—Big Thompson Project, Colorado
Normal Maximum 722,600 ac-ft



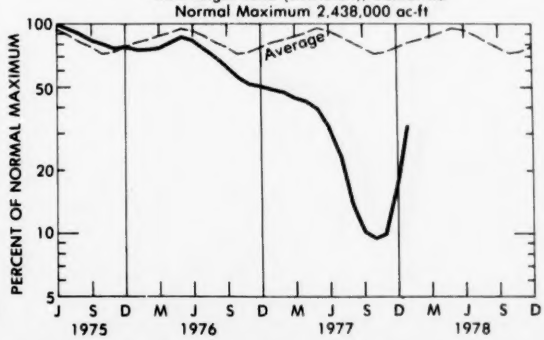
Shasta Lake, California
Normal Maximum 4,377,000 ac-ft



Elephant Butte and Caballo, New Mexico
Normal Maximum 2,539,000 ac-ft



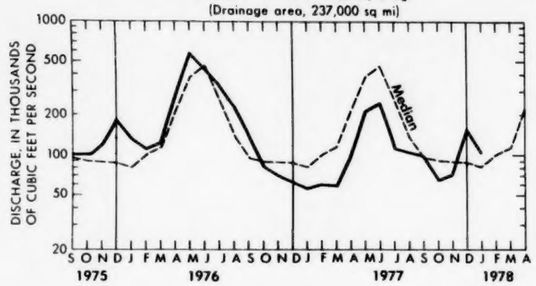
Clair Engle Lake (Lewiston), California
Normal Maximum 2,438,000 ac-ft



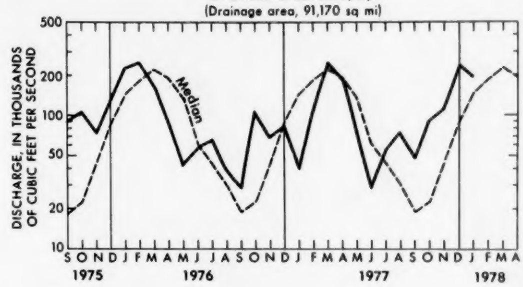
Abnormally low contents continued to characterize reservoirs in various parts of the West, although remarkable increases in storage were noted in California reservoirs, including two of the four reservoirs shown in the above graphs. Snowpack throughout the West was generally reported above normal and good recharge to reservoirs is expected when the snowmelt season begins.

HYDROGRAPHS OF FOUR LARGE RIVERS

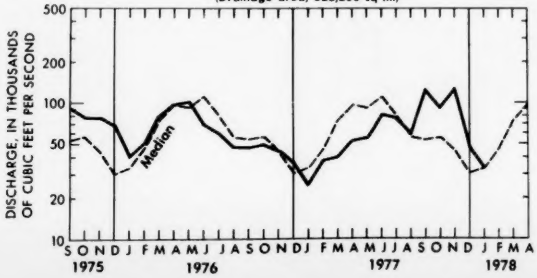
Columbia River at The Dalles, Oreg.
(Drainage area, 237,000 sq mi)



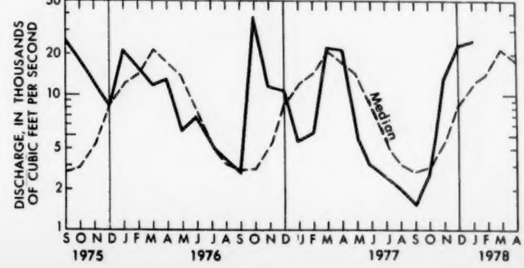
Ohio River at Louisville, Ky.
(Drainage area, 91,170 sq mi)



Missouri River at Hermann, Mo.
(Drainage area, 528,200 sq mi)



Potomac River near Washington, D.C.
(Drainage area, 11,560 sq mi)



DISSOLVED SOLIDS AND WATER TEMPERATURES FOR JANUARY AT DOWNSTREAM SITES ON SIX LARGE RIVERS

Station number	Station name	January data of following calendar years	Stream discharge during month	Dissolved-solids concentration during month[a]		Dissolved-solids discharge during month[a]			Water temperature during month[b]		
			Mean (cfs)	Minimum (mg/L)	Maximum (mg/L)	Mean (tons per day)	Minimum (tons per day)	Maximum (tons per day)	Mean, in °C	Minimum, in °C	Maximum, in °C
	NORTHEAST										
01463500	Delaware River at	1978	29,500	72	107	6,600	2,640	17,690	2.0	1.0	5.0
	Trenton, N.J.	1945–77	12,570	62	201	....	998	20,800	......	0	7.5
	(Morrisville, Pa.)	(Extreme yr)		(1951, 1960)	(1959)		(1965)	(1976)			
			[c]10,240								
04264331	St. Lawrence River at	1978	250,000	166	167	115,000	98,000	128,000	0.5	0	2.0
	Cornwall, Ontario, near	1976–77	235,000	166	168	106,000	90,000	122,000	0.5	0	1.0
	Massena, N.Y. (streamflow	(Extreme Yr)		(1976, 1977)	(1976, 1977)		(1977)	(1976)			
	station formerly at		[c]223,000								
	Ogdensburg, N.Y.)										
	SOUTHEAST										
07289000	Mississippi River at	1978	653,500	203	246	393,000	339,000	501,000	1.0	0	2.5
	Vicksburg, Miss	1976–77	493,600	161	232	250,000	138,000	421,000	3.0	0	6.5
		(Extreme yr)		(1976)	(1977)		(1977)	(1976)			
			[c]535,400								
	WESTERN GREAT LAKES REGION										
03612500	Ohio River at lock and dam	1978	442,400	173	237	....	135,000	402,000	......	0	4.5
	53, near Grand Chain, Ill.	1955–77	351,500	98	382	....	28,500	448,000	......	0	10.0
	(25 miles west of Paducah,	(Extreme yr)		(1973)	(1964)		(1956)	(1970)			
	Ky.; streamflow station		[c]315,300								
	at Metropolis, Ill.)										
	MIDCONTINENT										
06934500	Missouri River at Hermann,	1978	33,400	360	442	37,500	28,500	49,200	0	0	0
	Mo. (60 miles west of St.	1976–77	32,350	159	553	37,200	26,700	53,700	0	0	4.5
	Louis, Mo.)	(Extreme yr)		(1976)	(1977)		(1976)	(1976)			
			[c]32,940								
	WEST										
14128910	Columbia River at	1978	163,000	76	91	35,100	25,400	47,600	3.0	2.0	4.0
	Warrendale, Oreg.	1976–77*	172,400	....	....	....	....	....	.....	....	....
	(30 miles east of Portland,	1976	201,300	79	92	45,800	32,300	57,100	7.0	6.5	8.0
	Oreg.; streamflow station		[c]112,300								
	at The Dalles, Oreg.)										

[a]Dissolved-solids concentrations when not analyzed directly, are calculated on basis of measurements of specific conductance.
[b]To convert °C to °F: $[(1.8 \times °C) + 32] = °F$.
[c]Median of monthly values for 30-year reference period, water years 1941–70, for comparison with data for current month.
*The dissolved-solids and water-temperature recorder was inoperative during the month of January 1977.

USABLE CONTENTS OF SELECTED RESERVOIRS NEAR END OF JANUARY 1978

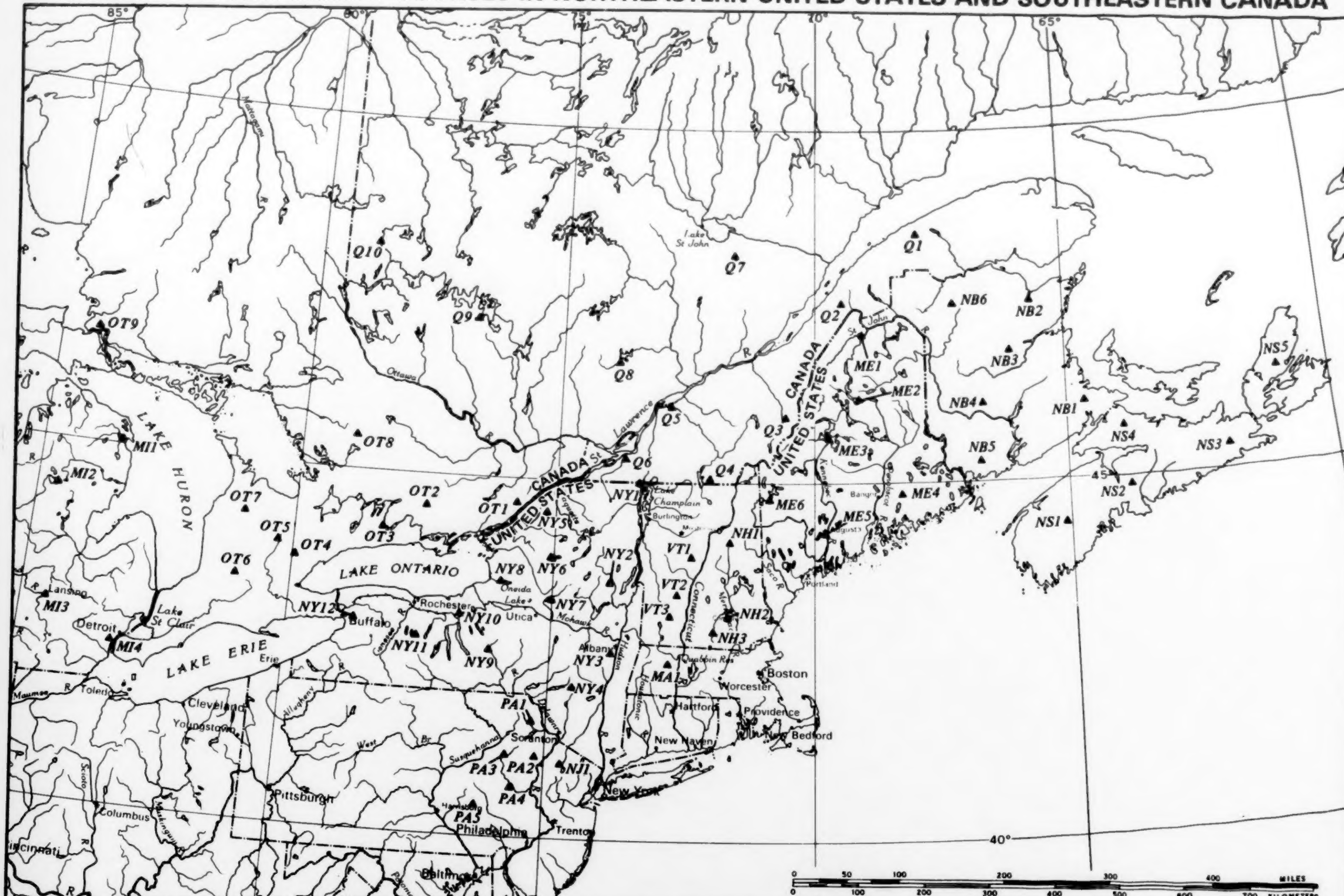
[Contents are expressed in percent of reservoir capacity. The usable storage capacity of each reservoir is shown in the column headed "Normal maximum."]

Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	End of Dec. 1977	End of Jan. 1978	End of Jan. 1977	Average for end of Jan.	Normal maximum
	Percent of normal maximum				
NORTHEAST REGION					
NOVA SCOTIA					
Rossignol, Mulgrave, Falls Lake, St. Margaret's Bay, Black, and Ponhook Reservoirs (P)	80	94	69	55	226,300 (a)
QUEBEC					
Allard (P)	83	62	54	44	280,600 ac-ft
Gouin (P)	74	68	65	56	6,954,000 ac-ft
MAINE					
Seven reservoir systems (MP)	83	86	63	48	178,500 mcf
NEW HAMPSHIRE					
First Connecticut Lake (P)	b2	b3	35	36	3,330 mcf
Lake Francis (FPR)	81	63	49	50	4,326 mcf
Lake Winnipesaukee (PR)	82	78	64	56	7,200 mcf
VERMONT					
Harriman (P)	76	62	49	46	5,060 mcf
Somerset (P)	84	59	55	59	2,500 mcf
MASSACHUSETTS					
Cobble Mountain and Borden Brook (MP)	78	79	67	70	3,394 mcf
NEW YORK					
Great Sacandaga Lake (FPR)	69	57	42	44	34,270 mcf
Indian Lake (FMP)	85	77	47	53	4,500 mcf
New York City reservoir system (MW)	100	99	84	.....	547,500 mg
NEW JERSEY					
Wanaque (M)	101	102	76	76	27,730 mg
PENNSYLVANIA					
Allegheny (FPR)	31	12	15	25	51,400 mcf
Pymatuning (FMR)	104	96	70	82	8,191 mcf
Raystown Lake (FR)	62	61	61	41	33,190 mcf
Lake Wallenpaupack (PR)	73	74	44	51	6,875 mcf
MARYLAND					
Baltimore municipal system (M)	81	89	93	86	85,340 mg
SOUTHEAST REGION					
NORTH CAROLINA					
Bridgewater (Lake James) (P)	78	93	67	78	12,580 mcf
Narrows (Badin Lake) (P)	92	100	97	96	5,617 mcf
High Rock Lake (P)	54	100	50	68	10,230 mcf
SOUTH CAROLINA					
Lake Murray (P)	79	86	78	63	70,300 mcf
Lakes Marion and Moultrie (P)	63	84	89	68	81,100 mcf
SOUTH CAROLINA––GEORGIA					
Clark Hill (FP)	62	93	71	57	75,360 mcf
GEORGIA					
Burton (PR)	80	82	55	55	104,000 ac-ft
Sinclair (MPR)	63	96	74	80	214,000 ac-ft
Lake Sidney Lanier (FMPR)	63	67	61	53	1,686,000 ac-ft
ALABAMA					
Lake Martin (P)	73	89	70	67	1,373,000 ac-ft
TENNESSEE VALLEY					
Clinch Projects: Norris and Melton Hill Lakes (FPR)	42	46	29	33	1,156,000 cfsd
Douglas Lake (FPR)	14	29	10	13	703,100 cfsd
Hiwassee Projects: Chatuge, Nottely, Hiwassee, Apalachia, Blue Ridge, Ocoee 3, and Parksville Lakes (FPR)	50	52	41	41	510,300 cfsd
Holston Projects: South Holston, Watauga, Boone, Fort Patrick Henry, and Cherokee Lakes (FPR)	38	39	31	32	1,452,000 cfsd
Little Tennessee Projects: Nantahala, Thorpe, Fontana, and Chilhowee Lakes (FPR)	49	53	30	39	745,200 cfsd
WESTERN GREAT LAKES REGION					
WISCONSIN					
Chippewa and Flambeau (PR)	80	57	52	42	15,900 mcf
Wisconsin River (21 reservoirs) (PR)	68	49	9	33	17,400 mcf
MINNESOTA					
Mississippi River headwater system (FMR)	24	20	11	20	1,640,000 ac-ft
MIDCONTINENT REGION					
NORTH DAKOTA					
Lake Sakakawea (Garrison) (FIPR)	72	69	81	.....	22,640,000 ac-ft
SOUTH DAKOTA					
Angostura (I)	61	53	63	74	127,600 ac-ft
Bell Fourche (I)	40	46	31	48	185,200 ac-ft
Lake Francis Case (FIP)	63	69	68	65	4,834,000 ac-ft
Lake Oahe (FIP)	69	71	81	.....	22,530,000 ac-ft

Reservoir Principal uses: F–Flood control I–Irrigation M–Municipal P–Power R–Recreation W–Industrial	End of Dec. 1977	End of Jan. 1978	End of Jan. 1977	Average for end of Jan.	Normal maximum
	Percent of normal maximum				
MIDCONTINENT REGION––Continued					
SOUTH DAKOTA––Continued					
Lake Sharpe (FIP)	102	103	103	96	1,725,000 ac-ft
Lewis and Clarke Lake (FIP)	95	93	95	93	477,000 ac-ft
NEBRASKA					
Lake McConaughy (IP)	67	68	71	72	1,948,000 ac-ft
OKLAHOMA					
Eufaula (FPR)	85	82	67	82	2,378,000 ac-ft
Keystone (FPR)	91	84	62	88	661,000 ac-ft
Tenkiller Ferry (FPR)	101	94	69	88	628,200 ac-ft
Lake Altus (FIMR)	70	71	55	48	134,500 ac-ft
Lake O'The Cherokees (FPR)	88	85	68	78	1,492,000 ac-ft
OKLAHOMA––TEXAS					
Lake Texoma (FMPRW)	85	80	79	87	2,722,000 ac-ft
TEXAS					
Bridgeport (IMW)	67	64	92	43	386,400 ac-ft
Canyon (FMR)	92	92	98	69	385,600 ac-ft
International Amistad (FIMPW)	95	95	107	78	3,497,000 ac-ft
International Falcon (FIMPW)	89	84	100	74	2,667,000 ac-ft
Livingston (IMW)	100	100	100	74	1,788,000 ac-ft
Possum Kingdom (IMPRW)	82	81	89	97	569,400 ac-ft
Red Bluff (PI)	6	7	22	31	307,000 ac-ft
Toledo Bend (P)	80	87	87	79	4,472,000 ac-ft
Twin Buttes (FIM)	77	78	100	24	177,800 ac-ft
Lake Kemp (IMW)	61	60	78	88	268,000 ac-ft
Lake Meredith (FMW)	37	36	39	38	821,300 ac-ft
Lake Travis (FIMPRW)	75	75	99	79	1,144,000 ac-ft
THE WEST					
WASHINGTON					
Ross (PR)	82	60	40	53	1,052,000 ac-ft
Franklin D. Roosevelt Lake (IP)	89	60	81	79	5,232,000 ac-ft
Lake Chelan (PR)	54	43	38	44	676,100 ac-ft
Lake Cushman	86	79	53	83	359,500 ac-ft
Lake Merwin (P)	101	97	92	96	246,000 ac-ft
IDAHO					
Boise River (4 reservoirs) (FIP)	28	34	63	64	1,235,000 ac-ft
Coeur d'Alene Lake (P)	88	70	16	49	238,500 ac-ft
Pend Oreille Lake (FP)	36	35	40	54	1,561,000 ac-ft
IDAHO––WYOMING					
Upper Snake River (8 reservoirs) (MP)	37	45	70	67	4,401,000 ac-ft
WYOMING					
Boysen (FIP)	67	68	72	69	802,000 ac-ft
Buffalo Bill (IP)	46	47	53	65	421,300 ac-ft
Keyhole (F)	56	56	66	40	199,900 ac-ft
Pathfinder, Seminoe, Alcova, Kortes, Glendo, and Guernsey Reservoirs (I)	40	41	57	46	3,056,000 ac-ft
COLORADO					
John Martin (FIR)	0	1	4	16	364,400 ac-ft
Taylor Park (IR)	36	33	56	55	106,200 ac-ft
Colorado–Big Thompson project (I)	22	22	48	56	722,600 ac-ft
COLORADO RIVER STORAGE PROJECT					
Lake Powell; Flaming Gorge, Navajo, and Blue Mesa Reservoirs (IFPR)	59	58	72	......	31,280,000 ac-ft
UTAH––IDAHO					
Bear Lake (IPR)	54	55	73	56	1,421,000 ac-ft
CALIFORNIA					
Folsom (FIP)	21	60	30	52	1,000,000 ac-ft
Hetch Hetchy (MP)	24	25	10	30	360,400 ac-ft
Isabella (FIR)	7	12	12	24	551,800 ac-ft
Pine Flat (FI)	13	28	26	49	1,014,000 ac-ft
Clair Engle Lake (Lewiston) (P)	17	33	48	79	2,438,000 ac-ft
Lake Almanor (P)	52	60	58	47	1,036,000 ac-ft
Lake Berryessa (FIMW)	48	66	62	83	1,600,000 ac-ft
Millerton Lake (FI)	41	70	50	63	503,200 ac-ft
Shasta Lake (FIPR)	24	66	36	70	4,377,000 ac-ft
CALIFORNIA––NEVADA					
Lake Tahoe (IPR)	0	5	23	51	744,600 ac-ft
NEVADA					
Rye Patch (I)	26	28	66	79	157,200 ac-ft
ARIZONA––NEVADA					
Lake Mead and Lake Mohave (FIMP)	78	75	85	66	27,970,000 ac-ft
ARIZONA					
San Carlos (IP)	2	2	1	15	1,073,000 ac-ft
Salt and Verde River system (IMPR)	25	28	48	39	2,073,000 ac-ft
NEW MEXICO					
Conchas (FIR)	31	30	24	75	352,600 ac-ft
Elephant Butte and Caballo (FIPR)	8	9	18	28	2,539,000 ac-ft

[a] Thousands of kilowatt-hours (the potential electric power that could be generated by the volume of water in storage).
[b] Reservoir drawn down for repairs.

SELECTED SNOW SURVEY COURSES IN NORTHEASTERN UNITED STATES AND SOUTHEASTERN CANADA



SNOW SURVEY DATA

Map number	Snow course	River basin	Location			This season			Past seasons Water content		Agency providing data*
			Elev. above MSL	Latitude	Longitude	Date of survey	Snow depth (inches)	Water content (inches)	End of January average	Years of record	
NS1	Caledonia	Medway	300	44°25′	65°03′	1/26	7.7	1.2			WSC
NS2	Mount Uniacke		500	44°53′	63°50′	1/24	8.3	1.2			...do ....
NS3	Copper Lake	South	320	45°23′	61°57′	1/23	6.2	1.0			...do ....
NS4	Oxford	Philip	120	45°43′	63°51′	1/24	13.8	2.1			...do ....
NS5	Margaree Valley	Northeast Margaree	150	46°21′	60°58′	1/25	5.8	2.1			...do ....
NB1	Moncton	Petitcodiac	150	46°04′	64°36′	1/19	22.4	4.1	3.4	16	...do ....
NB2	Pabineau Falls	Nipisiguit	100	47°30′	65°41′	1/11	8.0	1.1	4.9	16	...do ....
NB3	Renous	Miramichi	75	46°56′	65°55′	1/23	25.0	4.6	4.4	9	...do ....
NB4	Royal Road	N. Nashwaaksis	427	46°04′	66°43′				4.0	11	NBDOE
NB5	Elmcroft	Magaguadavic	300	45°16′	66°49′	1/9	11.9	3.1	2.3	16	WSC
NB6	St. Quentin No. 1	Restigouche	1,200	47°30′	67°15′				5.4	16	NBEPC
Q1	St-Moise	Mitis	775	48°31′	67°59′	1/28	28.4	7.1	7.2	17	QMS
Q2	Pelletier	Du Loup	1,200	47°34′	69°27′	1/29	29.2	7.0	6.6	18	...do ....
Q3	St-Theophile	Chaudiere	1,450	45°56′	70°31′	1/31	23.2	4.3	3.8	19	...do ....
Q4	Stanstead	St-Francois	1,250	45°03′	72°04′	1/31	24.8	6.0	4.5	21	...do ....
Q5	Pierreville	...do	75	46°04′	72°48′	2/2	29.1	6.9	5.0	20	...do ....
Q6	Mercier	Chateauguay	180	45°19′	73°45′	2/2	23.5	5.5	4.8	5	...do ....
Q7	Rivere Aux Ecorces	Reservoir Kenogami	1,400	48°11′	71°38′	1/30	26.2	4.9	5.8	17	...do ....
Q8	St-Michel-Des Saints	St-Maurice	1,300	46°42′	73°53′	1/30	29.2	5.6	4.5	11	...do ....
Q9	Depot-Forbes	Gatineau	1,230	47°13′	76°44′	2/1	27.2	5.7	5.0	11	...do ....
Q10	McWatters	Outaouais	960	48°13′	78°55′	1/29	32.5	6.3	4.6	22	...do ....
OT1	Brockville	Buell Creek	350	44°38′	75°43′				3.3	7	WSC
OT2	Madoc	Moira	650	44°31′	77°31′	1/15	20.0	6.3	3.2	19	...do ....
OT3	Squirrel Creek	Trent	625	44°11′	78°20′	2/1	15.8	4.7	2.2	6	...do ....
OT4	Terra Cotta`	Credit	1,125	43°43′	79°57′	1/15	17.9	4.1	2.3	15	...do ....
OT5	Waldemar	Grand	1,490	43°54′	80°17′	1/15	16.4	4.3	2.9	17	...do ....
OT6	Sebringville	Thames	1,190	43°24′	81°01′	1/15	10.6	2.7	2.2	21	...do ....
OT7	Chesley	Saugeen	975	44°17′	81°02′	1/15	14.5	4.0	3.0	18	...do ....
OT8	Kiwanis	Muskoka	1,300	45°27′	78°58′	1/15	21.2	3.0	4.0	13	...do ....
OT9	Wishart	Root	725	46°34′	84°17′	1/15	25.8	5.5	7.2	5	...do ....
ME1	Alagash "B"	St. John	640	47°05′	69°04′	2/1	29.3	5.8			USGS
ME2	Telos	Penobscot	1,000	46°09′	69°07′	1/31	22.5	6.5			BHEC
ME3	Moosehead	Kennebec	1,040	45°35′	69°43′	1/31	29.2	7.4			KWPC
ME4	Amherst	Coastal	150	44°49′	68°22′						BHEC
ME5	Augusta	Kennebec	160	44°19′	69°45′	1/31	13.0	3.0			USGS
ME6	Middle Dam	Androscoggin	1,430	44°46′	70°55′	2/1	31.0	7.9			UWPC
NH1	Cannon Mt. (Base)	Merrimack	1,950	44°10′	71°41′						CE
NH2	Everett Dam	...do	460	43°05′	71°39′	1/30	21.6	6.1			...do ....
NH3	MacDowell Dam	...do	960	42°54′	71°59′	1/30	21.9	6.2			...do ....
VT1	Vershire	Connecticut	1,920	43°59′	72°22′						...do ....
VT2	Proctorsville Gulf	...do	1,060	43°22′	72°38′	1/31	29.8	7.7			...do ....
VT3	Ball Mt. Dam	...do	1,130	43°06′	72°48′	1/31	31.0	8.4			...do ....
MA1	Lithia Post Office	Connecticut	1,180	42°27′	72°50′	1/31	18.0	5.4			...do ....
NY1	Perry Mills	Lake Champlain	200	44°59′	73°31′	1/30	19.8	4.77	2.54	31	USGS
NY2	Sodom	Hudson	1,400	43°37′	73°59′	1/31	31.4	7.34	3.87	26	NMP-Albany
NY3	Slingerlands	Hudson	230	42°38′	73°53′	1/31	13.4	3.52	1.45	19	USGS
NY4	Margaretville	Delaware	1,340	42°09′	74°38′	1/31	7.5	2.10	1.24	28	...do ....
NY5	Pyrites	St. Lawrence	400	44°32′	75°11′	2/1	22.9	5.56	2.28	31	...do ....
NY6	Stillwater Reservoir	Black	1,700	43°54′	75°03′	1/31	33.9	8.00	4.87	34	BRRD
NY7	Northwood	Mohawk	1,250	43°21′	75°04′	1/30	36.0	8.50	4.47	33	NMP-Utica
NY8	Stillwater Dam	Eastern Oswego	970	43°33′	75°55′	1/30	56.2	13.81	4.85	34	NMP-Syracuse
NY9	Cortland	E. Susquehanna	1,130	42°36′	76°11′	1/30	17.0	3.12	1.24	24	NWS-Albany
NY10	Clyde (Lock 26)	Western Oswego	392	43°04′	76°50′	1/30	20.0	4.09	1.76	16	DOT-Syracuse
NY11	Canadice and Hemlock Lakes	Genesee	1,800	42°43′	77°35′	1/31	17.1	3.31	1.46	27	DPW-Rochester
NY12	Buffalo Airport	Lake Erie	705	42°56′	78°44′	2/1	15.0	2.70	1.60	9	NWS-Buffalo
NJ1	Newton	Pequest	640	41°01′	74°47′	1/31	10.5	2.65			USGS
PA1	Prompton-Jadwin Reservoir	Lackawaxen	1,600	41°36′	75°18′	1/31	18.8	4.46			CE
PA2	Paradise Valley	Brodhead Cr.	840	41°07′	75°16′	1/30	14.2	3.20			USGS
PA3	F. E. Walter Reservoir	Lehigh	1,700	41°07′	75°44′	1/31	15.4	3.46			CE
PA4	Lyon Valley	Jordan Cr.	720	40°40′	75°40′	1/31	9.8	2.50			USGS
PA5	Meyerstown	Schuylkill	660	40°24′	76°18′	1/31	10.0	2.65			...do ....
MI1	Alpena	Thunder Bay	689	45°04′	83°34′	1/31	24.0	5.9			NWS
MI2	Houghton Lake	Muskegon	1,149	44°22′	84°41′	1/31	20.0	5.5			...do ....
MI3	Lansing	Grand	841	42°47′	84°36′	1/31	23.0	4.0			...do ....
MI4	Detroit	Rouge	633	42°14′	83°20′	1/31	9.0	1.5			...do ....

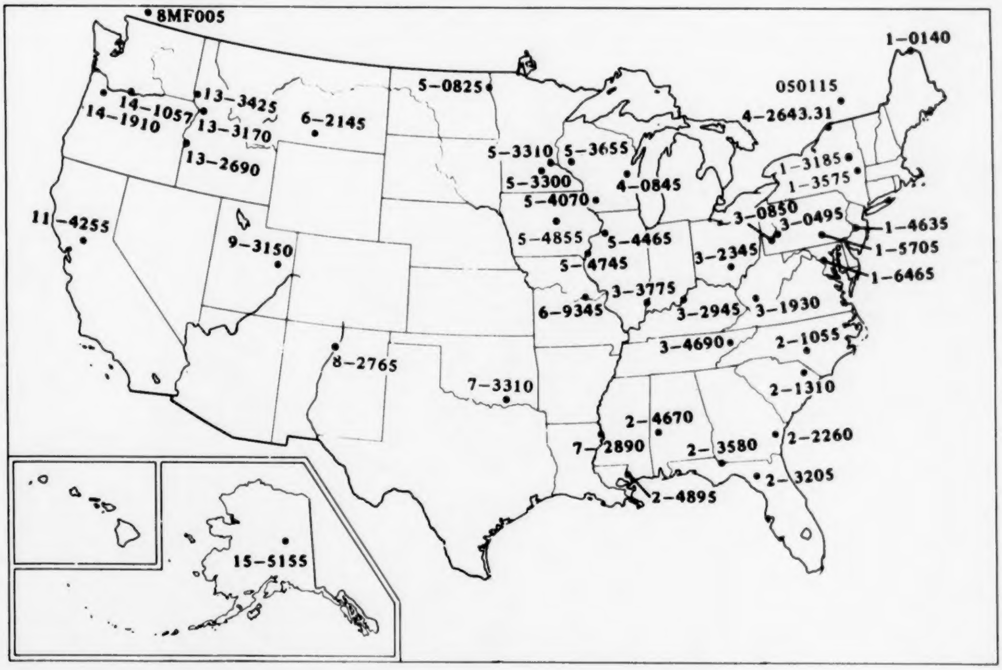
*Key: WSC – Water Survey of Canada; NBDOE – New Brunswick Department of Environment; NBEPC – New Brunswick Electric Power Commission; QMS – Quebec Meteorological Service; USGS – United States Geological Survey; BHEC – Bangor Hydro Electric Company; KWPC – Kennebec Water Power Company; UWPC – Union Water Power Company; CE – Corps of Engineers; NMP – Niagara Mohawk Power; BRRD – Black River Regulating District; NWS – National Weather Service; DOT – Department of Transportation; DPW – Department of Public Works. Blank space indicates data not available.

FLOW OF LARGE RIVERS DURING JANUARY 1978

Station number*	Stream and place of determination	Drainage area (square miles)	Mean annual discharge through September 1970 (cfs)	January 1978					
				Monthly discharge (cfs)	Percent of median monthly discharge, 1941–70	Change in discharge from previous month (percent)	Discharge near end of month		
							(cfs)	(mgd)	Date
1–0140	St. John River below Fish River at Fort Kent, Maine.	5,690	9,397	8,113	289	+39	8,800	5,690	31
1–3185	Hudson River at Hadley, N.Y	1,664	2,791	5,331	302	+51	5,000	3,200	31
1–3575	Mohawk River at Cohoes, N.Y	3,456	5,450	8,178	179	-30	......	......	.....
1–4635	Delaware River at Trenton, N.J	6,780	11,360	27,181	265	+11	51,500	33,300	29
1–5705	Susquehanna River at Harrisburg, Pa.	24,100	33,670	68,900	227	-10	52,200	33,700	26
1–6465	Potomac River near Washington, D.C.	11,560	[1] 10,640	24,400	212	+7	32,000	20,700	31
2–1055	Cape Fear River at William O. Huske Lock near Tarheel, N.C.	4,810	4,847	18,540	353	+299	25,100	16,200	31
2–1310	Pee Dee River at Peedee, S.C	8,830	9,098	23,000	230	+121	42,800	27,700	29
2–2260	Altamaha River at Doctortown, Ga.	13,600	13,380	21,970	154	+126	50,700	32,800	30
2–3205	Suwannee River at Branford, Fla	7,740	6,775	7,760	186	+70	11,500	7,430	31
2–3580	Apalachicola River at Chattahoochee, Fla.	17,200	21,690	50,300	197	+186	82,900	53,600	31
2–4670	Tombigbee River at Demopolis lock and dam near Coatopa, Ala.	15,400	21,700	39,440	136	-4	74,400	48,100	30
2–4895	Pearl River near Bogalusa, La	6,630	8,533	14,740	182	-30	35,000	22,600	31
3–0495	Allegheny River at Natrona, Pa	11,410	[1] 18,700	23,020	104	-52	14,600	9,440	25
3–0850	Monongahela River at Braddock, Pa.	7,337	[1] 11,950	12,050	72	-33	10,800	6,980	25
3–1930	Kanawha River at Kanawha Falls, W.Va.	8,367	12,370	21,570	138	+19	75,100	48,500	27
3–2345	Scioto River at Higby, Ohio	5,131	4,337	5,550	147	-54	11,000	7,100	30
3–2945	Ohio River at Louisville, Ky[2]	91,170	110,600	190,100	130	-18	437,000	282,000	28
3–3775	Wabash River at Mount Carmel, Ill.	28,600	26,310	24,330	110	-61	14,200	9,180	31
3–4690	French Broad River below Douglas Dam, Tenn.	4,543	[1] 6,528	14,140	177	+52	......	......	.....
4–0845	Fox River at Rapide Croche Dam, near Wrightstown, Wis.[2]	6,150	4,142	4,015	116	+11	......	......	.....
02MC002 (4–2643.31)	St. Lawrence River at Cornwall, Ontario–near Massena, N.Y.[3]	299,000	239,100	249,000	112	-3	279,000	180,000	31
050115	St. Maurice River at Grand Mere, Quebec.	16,300	24,900	8,790	105	-17	25,400	16,400	31
5–0825	Red River of the North at Grand Forks, N. Dak.	30,100	2,439	1,293	166	-5	1,240	800	31
5–3300	Minnesota River near Jordan, Minn	16,200	3,306	991	204	-37	830	540	25
5–3310	Mississippi River at St. Paul, Minn	36,800	[1] 10,230	6,860	153	-35	6,170	3,990	25
5–3655	Chippewa River at Chippewa Falls, Wis.	5,600	5,062	4,427	161	-15	......	......	.....
5–4070	Wisconsin River at Muscoda, Wis	10,300	8,457	7,594	135	+2	......	......	.....
5–4465	Rock River near Joslin, Ill	9,520	5,288	4,360	126	-22	3,100	2,000	31
5–4745	Mississippi River at Keokuk, Iowa	119,000	61,210	47,100	142	-1	38,000	24,600	31
5–4855	Des Moines River below Raccoon River at Des Moines, Iowa.	9,879	3,796	775	138	-51	440	280	31
6–2145	Yellowstone River at Billings, Mont.	11,795	6,754	1,960	76	-24	2,210	1,430	31
6–9345	Missouri River at Hermann, Mo	528,200	78,480	33,080	100	-29	31,100	20,100	26
7–2890	Mississippi River at Vicksburg, Miss.[4]	1,144,500	552,700	653,500	122	-25	665,000	430,000	31
7–3310	Washita River near Durwood, Okla	7,202	1,379	204	45	+3	200	130	31
8–2765	Rio Grande below Taos Junction Bridge, near Taos, N. Mex.	9,730	732	336	73	+42	364	235	31
9–3150	Green River at Green River, Utah	40,600	6,369	1,527	83	+14	2,000	1,300	31
11–4255	Sacramento River at Verona, Calif	21,257	18,370	41,830	163	+272	38,400	24,800	27
13–2690	Snake River at Weiser, Idaho	69,200	17,670	13,940	93	+5	13,300	8,600	30
13–3170	Salmon River at White Bird, Idaho	13,550	11,060	4,681	111	-28	4,650	3,010	27
13–3425	Clearwater River at Spalding, Idaho	9,570	15,320	17,910	272	-63	17,000	11,000	30
14–1057	Columbia River at The Dalles, Oreg.[5]	237,000	194,000	106,300	128	-33	......	......	.....
14–1910	Willamette River at Salem, Oreg	7,280	23,370	48,600	88	-52	44,360	28,700	27–31
15–5155	Tanana River at Nenana, Alaska	25,600	24,040	7,000	108	-8	7,000	4,500	31
8MF005	Fraser River at Hope, British Columbia.	83,800	95,300	30,600	89	-17	26,400	17,100	31

[1] Adjusted.
[2] Records furnished by Corps of Engineers.
[3] Records furnished by Buffalo District, Corps of Engineers, through International St. Lawrence River Board of Control. Discharges shown are considered to be the same as discharge at Ogdensburg, N.Y. when adjusted for storage in Lake St. Lawrence.
[4] Records of daily discharge computed jointly by Corps of Engineers and Geological Survey.
[5] Discharge determined from information furnished by Bureau of Reclamation, Corps of Engineers, and Geological Survey.
*The U.S. station numbers as listed in this table are in a shortened form previously in use, and used here for simplicity of tabular and map presentation. The full, correct number contains 8 digits and no punctuation marks. For example, the correct form for station number 1–3185 is 01318500.

SELECTED STREAM-GAGING STATIONS ON LARGE RIVERS



Location of stream-gaging stations on large rivers listed in table on page 18.

WATER RESOURCES REVIEW

January 1978

Based on reports from the Canadian and U.S. field offices; completed February 14, 1978

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EXPLANATION OF DATA

Cover map shows generalized pattern of streamflow for January based on 20 index stream-gaging stations in Canada and 130 index stations in the United States. Alaska and Hawaii inset maps show streamflow only at the index gaging stations which are located near the points shown by the arrows.

Streamflow for January 1978 is compared with flow for January in the 30-year reference period 1941–70. Streamflow is considered to be *below the normal range* if it is within the range of the low flows that have occurred 25 percent of the time (below the lower quartile) during the reference period. Flow for December is considered to be *above the normal range* if it is within the range of the high flows that have occurred 25 percent of the time (above the upper quartile).

Flow higher than the lower quartile but lower than the upper quartile is described as being *within the normal range.* In the Water Resources Review the median is obtained by ranking the 30 flows of the reference period in their order of magnitude; the highest flow is number 1, the lowest flow is number 30, and the average of the 15th and 16th highest flows is the median.

The normal is an average (but not an arithmetic average) or middle value; half of the time you would expect the January flows to be below the median and half of the time to be above the median. Shorter reference periods are used for the Alaska index stations because of the limited records available.

Statements about *ground-water levels* refer to conditions near the end of January Water level in each key observation well is compared with average level for the end of January determined from the entire past record for that well or from a 20-year reference period, 1951–70. *Changes in ground-water levels,* unless described otherwise, are from the end of December to the end of January.

The Water Resources Review is published monthly. Special-purpose and summary issues are also published. Issues of the Review are free on application to the Water Resources Review, U.S. Geological Survey, Reston, Virginia 22092.

MAXIMUM FLOODFLOWS IN THE CONTERMINOUS UNITED STATES

The abstract, map, and graph below are from the report, *Maximum floodflows in the conterminous United States,* by J.R. Crippen and Conrad D. Bue: U.S. Geological Survey Water-Supply Paper 1887, 52 pages, 1977. This report may be purchased for $1.70 from Branch of Distribution, U.S. Geological Survey, 1200 S. Eads St., Arlington, VA 22202 (check or money order payable to U.S. Geological Survey); or from Superintendent of Documents, Government Printing Office, Washington D.C. 20402 (payable to Superintendent of Documents).

ABSTRACT

Peak floodflows from thousands of observation sites within the conterminous United States were studied to provide a guide for estimating potential maximum floodflows. Data were selected from 883 sites with drainage areas of less than 10,000 square miles (25,900 square kilometers) and were grouped into regional sets (fig. 1). Outstanding floods for each region were plotted on graphs, and envelope curves were computed that offer reasonable limits for estimates of maximum floods (fig. 2). The curves indicate that floods may occur that are two to three times greater than those known for most streams.

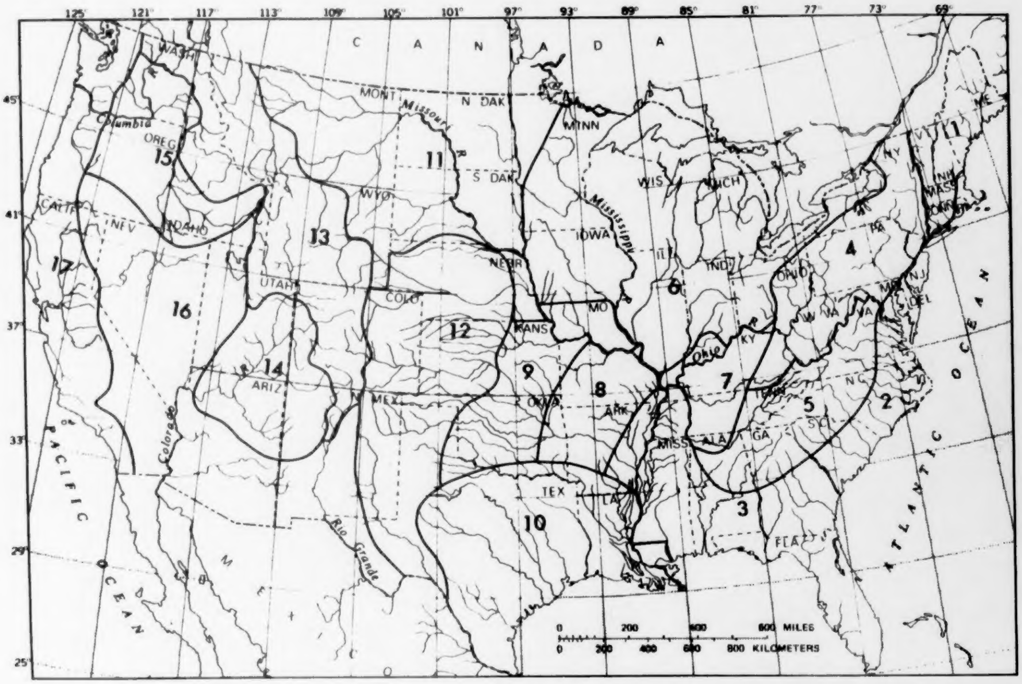

Figure 1.—Map of the conterminous United States showing flood-region boundaries.

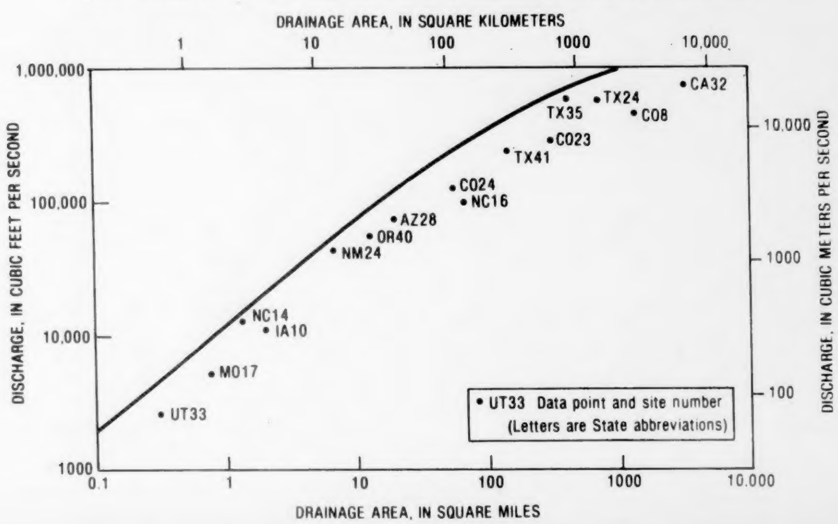

Figure 2.—Selected peak discharges versus drainage areas, and nationwide envelope curve.